UNITED STATES DISTRICT COURT
DISTRICT OF MASSACHUSETTS

SINGULAR COMPUTING LLC, Plaintiff, v. GOOGLE LLC, Defendant.	Civil Action No. 1:19-cv-12551-FDS Hon. F. Dennis Saylor IV

PLAINTIFF SINGULAR COMPUTING LLC'S REPLY CLAIM CONSTRUCTION BRIEF

Paul J. Hayes (BBO #227000)
Matthew D. Vella (BBO #660171)
Kevin Gannon (BBO #640931)
Daniel McGonagle (BBO #690084)
Brian M. Seeve (BBO #670455)
PRINCE LOBEL TYE LLP
One International Place, Suite 3700
Boston, MA 02110
Tel: (617) 456-8000
Fax: (617) 456-8100
Email: phayes@princelobel.com
Email: mvella@princelobel.com
Email: kgannon@princelobel.com
Email: dmcgonagle@princelobel.com
Email: bseeve@princelobel.com

ATTORNEYS FOR THE PLAINTIFF

TABLE OF CONTENTS

TABLE OF AUTHORITIES

Cases

Statutes

Other

Plaintiff, Singular Computing LLC ("Singular"), respectfully submits this Reply Claim Construction Brief.

I. INTRODUCTION

Google's indefiniteness argument is technically erroneous and legally flawed.[1] First, Google takes the term "repeated execution" out of context and ignores the conjoined claim term "statistical mean." When taken in context, this claim language provides a person of ordinary skill in the art ("POSITA") with ample information to determine with reasonable certainty the "statistical mean" without any need to specify the precise number of "repeated executions" performed to obtain such value.

Second, Google's indefiniteness argument and proposed claim constructions are contradicted by the representations made by Google and its expert (Mr. Richard Goodin) in the IPR proceedings. Google and Mr. Goodin had no problem understanding and applying the claims with "reasonable certainty" in the IPR proceedings.

In addition, given the myriad underlying issues of fact raised by Google, its indefiniteness arguments are premature at this stage of the proceedings. *See infra*.

Legally, Google's arguments fare no better. Google's position is inconsistent with settled law on the issue of indefiniteness. The Supreme Court established in *Nautilus* that claims should "inform those of ordinary skill in the art about the scope of the invention with reasonable certainty," but also noted that "[t]he definiteness requirement, so understood, mandates clarity, while recognizing that *absolute precision is unattainable*." *Nautilus, Inc. v. Biosig Instrs., Inc.*,

[1] Google opens its brief with a lengthy "Background" diatribe arguing that the asserted claims lack *novelty* and that Singular is pursuing this case in the knowledge that the asserted patents cover known and old technologies. *See* Google Br. at 2-5. Singular will not respond to these unfounded and irrelevant allegations in this brief.

572 U.S. 898, 910 (2014) (emphasis added). In particular, the standard does not require "absolute or mathematical precision." *BASF Corp. v. Johnson Matthey Inc.*, 875 F.3d 1360, 1365 (Fed. Cir. 2017).

II. THE ASSERTED CLAIMS ARE NOT INDEFINITE

Google's indefiniteness arguments are both technically incorrect and premature. Google's arguments are technically incorrect because when the term "repeated execution" is considered in the context of the claimed "statistical mean," the scope of the claims is readily ascertained by a person of ordinary skill in the art. Google's arguments are premature because they raise numerous disputed questions of fact for the jury.

A. Google represented to the PTAB that the scope of the claims is readily ascertained by a POSITA

The opinion of Dr. Wei that Google submitted to this Court in support of the present motion is in direct conflict with the expert Declarations of Mr. Goodin that Google submitted to the PTAB in support of Google's Petitions for IPR. Mr. Goodin had no problem in the IPR finding that the asserted claims provide "reasonable certainty" regarding the scope of the claims, and he applied the claims to the prior art and opined that each element of the claims is found in the prior art.

For example, in IPR2020-165, Google's Claim Construction statement was as follows:

> Claim terms are construed herein using the standard used in civil actions under 35 U.S.C. § 282(b), and have been given their ordinary and customary meaning as understood by a POSA in accordance with the specification and prosecution history. 37 C.F.R. § 42.100(b).

See Seeve Decl., Ex. 2, p. 9.[2] Accordingly, on this record alone, Google has failed to demonstrate that any of the asserted claims here are indefinite. *See, e.g., Sonix Tech. Co. v. Publ'ns Int'l Ltd.*,

[2] Google made similar statements in each of the other five Petitions. *See* Seeve Decl., Exs. 3-7.

844 F.3d 1370, 1377 (Fed. Cir. 2017) ("Indefiniteness must be proved by clear and convincing evidence."). In addition, in support of each of its six Petitions, Google submitted six Declarations of its IPR expert (Mr. Goodin) who opined that all of the claims asserted herein are invalid under 35 U.S.C. § 103. For example, regarding the "repeated execution" limitation of the claims that Google asserts herein to be indefinite, Mr. Goodin opined that:

> As I explain in paragraphs 57-60 below, a POSA would have understood that the claims expressly cover non-deterministic embodiments via the recited "statistical mean" provisions.

See Seeve Decl., Ex. 8, ¶ 56.[3]

For Google then, the definiteness *vel non* of the asserted claims depends not on the understanding of a person of ordinary skill in the art, but rather on which of its own contradictory expert opinions it finds most convenient at the time. Playing "fast and loose" with the Court in this manner should not be permitted, especially in Massachusetts. *See, e.g.*, *GE HFS Holdings, Inc. v. Nat'l Union Ins. Fire Ins. Co. of Pittsburgh PA*, 520 F. Supp. 2d 213, 223 (D. Mass. 2007) ("[A] litigant is playing fast and loose with the courts [] when intentional contradiction is being used as a means of obtaining unfair advantage in a forum provided for suitors seeking justice.") (internal citations omitted). For reasons known only to Google, it did not disclose to this Court Mr. Goodin's numerous IPR Declarations that contradict Wei's Declaration.

B. The Term "Repeated Execution" Is Not Indefinite

The asserted claims define the scope of the invention and satisfy the requirements of 35 U.S.C. § 112. Just like Google's Mr. Goodin, Singular's expert in this case, Sunil P. Khatri, Ph.D., understands the asserted claims with "reasonable certainty." *See* Khatri Decl. at ¶ 27. The term "repeated execution" is understandable when read in the context of the related claim

[3] Mr. Goodin made similar statements in his Declarations in IPRs for the '156 and '961 patents. *See* Seeve Decl., Exs. 9-13.

language, and is explicitly tied to finding "the statistical mean" of the numerical output values. For example, claim 53 of the '273 patent recites in relevant part as follows:

> for at least X=5% of the possible valid inputs to the first operation, *the statistical mean, over repeated execution of the first operation on each specific input … of the numerical values represented by the first output signal of the LPHDR unit executing the first operation on that input* differs by at least Y=0.05% from the result of an exact mathematical calculation of the first operation on the numerical values of that same input . . . .

'273 patent, claim 53 (emphasis added); *see also* '156 patent, claim 7; *see also* '961 patent, claims 4, 13. This claim language clearly informs a POSITA that "repeated execution of the first operation" (for example, the multiplication operation 2.0 × 1.0) by the LPHDR unit is used to obtain the "statistical mean" of the "numerical values represented by the first output signal of the LPHDR unit" as that unit repeatedly executes a first operation. *See* Khatri Decl. at ¶ 28.

As shown in more detail in the following section, a POSITA would know that while numerical values generated by any usable computer that is repeatedly executing an operation may slightly fluctuate from operation to operation (when using, *e.g.*, an analog processor), the average of those values over a period of just a few millionths of a second goes from being an arithmetic average that has an unstable value, to a stable average that does not meaningfully fluctuate. That is, once the average of that operation's repeated execution stabilizes, that average *does not materially changes again* during the useful life of a computer, even as more and more operations are repeatedly executed. *See id.* at ¶ 29.

Therefore, in the context of the claimed inventions, a POSITA would understand that "repeated execution" requires the LPHDR unit to repeatedly execute the "first operation" as many times as necessary, until a stable average of *all* numerical values represented by the unit's output signal is reached. *See id.* at ¶ 29. In the field of statistics, such an average that represents

all members of a population is referred to as a population mean, or more generally, a statistical "mean." *See id*. at ¶ 29. *see also* Seeve Decl., Ex. 15 (Oxford Dictionary of Statistics).

C. Google's Argument is Technically Erroneous

The purpose served by the claim term "statistical mean" is to characterize output values represented by an output signal of a computer device, which typically executes on the order of a billion operations a second. *See* Khatri Decl. at ¶ 30.[4] A POSITA would understand that it would be a technical absurdity to attempt to generate a "statistical" mean representing an output value of a repeated operation by repeating that operation just *ten* times and taking the arithmetic average output value of just those ten operations—especially in the context of a computer, as here, that generates a *billion* such output values per second. *See* Khatri Decl. at 30.

Taking an average of a computer output value using just ten operations, as Google suggests, is like judging Ted Williams's lifetime batting average based on his first played game, or calculating the average height of the U.S. population based upon averaging the height of the first ten people who walk down the street. This approach is technically erroneous as a matter of engineering as well as common sense. Accordingly, the test results in Google's expert report are unreliable on their face. *See* Khatri Decl. at ¶ 31.

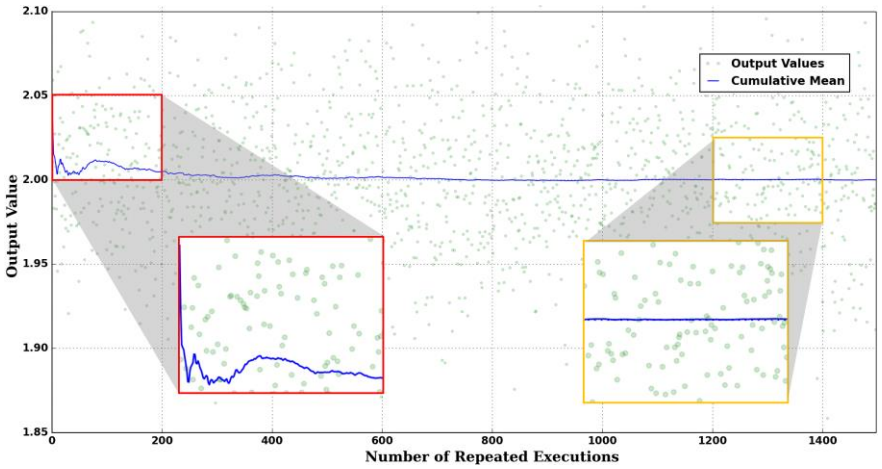
In his declaration, Dr. Wei worries that a POSITA would be left in the dark as to how many repeated executions should be performed before being able to characterize the imprecision represented by the output value of the claimed device. *See* Wei Decl. at 32. As explained by Dr. Khatri, however, and as acknowledged by Dr. Wei in his own publications, this is hardly a problem. A POSITA would only have to apply standard statistical analysis, and wait a few

[4] *See also*, *e.g.*, Seeve Decl. Ex. 14 (Linpack performance Haswell E (Core i7 5960X and 5930K)).

microseconds for the inevitable stabilization of the mean, to properly characterize the statistical mean of a device's output values. *See* Khatri Decl. at ¶ 32.

More specifically, as the Singular patent specification explains, devices that use analog signals to represent numbers "introduce noise into their computations" and produce outputs that are individually, *to a degree*, unpredictable. '273 patent at 4:12-13. Performing the same operation twice with identical inputs will thus produce different output values, and—at first—a fluctuating arithmetic *average*. *See* Khatri Decl. at ¶ 33. However, a POSITA would understand that the mean output values of repeated executions must obey the statistical Law of Large Numbers for the computer to be even usable: the average of those output values, over repeated executions, goes from being an arithmetic average that has an unstable value based on a small number of executions, to a reliable, stable, statistical mean that has a value representing the average of *all* output values. That statistical mean no longer materially changes over the useful life of the computer, no matter how many more executions are performed. *See* Khatri Decl. at ¶ 33.

As shown by the graph below, a POSITA using basic statistical analysis can determine the claimed "statistical mean" in less than a millionth of a second:



Specifically, the green dots on the graph above represent a sequence of 1500 "repeated executions" of a single operations (*i.e.*, the multiplication operation 2.0 × 1.0), plotted with the initial executions on the left and the later executions on the right. The vertical position of each green dot represents the output value of the corresponding repeated execution of the operation.[5] It is apparent that these output values fall within a wide range and show no discernible pattern as Dr Wei noted. *See* Khatri Decl. at ¶ 34.

The blue line shows the average of the first *x* repeated executions (for example, at *x*=10, the line represents the average of the first 10 executions). At first, near the left side of the graph, the average is unstable and fluctuates significantly over short periods of time (as shown by the magnified portion of the graph outlined using the **red box**). At this early stage, the arithmetic average is not the claimed "statistical mean" because -- like the averages in Dr. Wei's data set -- it does not represent all the repeated executions of the single operation that are taking place. *See* Khatri Decl. at ¶ 34. However, the arithmetic average begins to stabilize with more repeated executions of that single operation, holding steady at an output value of 2.00. Thereafter, no matter how many other repeated executions are added, the output value *never varies from 2.00 by more than a few thousandths of a percent* (as shown by the magnified portion of the graph outlined in **orange**). *This portion of the graph represents the "statistical mean" recited in the claims*. *See* Khatri Decl. at ¶ 34. By demonstrating that every execution unit will in short order generate a stable statistical mean, the graph above demonstrates the lack of any need to identify the precise number of executions to ascertain the claimed "statistical mean." In short, in a usable

[5] As explained in Dr. Khatri's declaration, the values shown in this graph were generated according to the same specifications that Dr. Wei used in generating his ten samples, *i.e.*, each value differs by roughly ±5% from an exact value of 2. Wei Decl. ¶ 38.

computer, repeated execution of a single operation will *always* reveal a single statistical mean after a few microseconds, due to the statistical law known as the Law of Large Numbers. *See* Khatri Decl. at 34.[6]

A POSITA would be familiar with the Law of Large Numbers and the other statistical principles described above. Statistics is usually taught within the first few years of an undergraduate engineering program, and these concepts are well within the bounds of undergraduate statistics. Indeed, Dr. Wei himself, in his own publications, refers to the concept of "statistical average" in a way that clearly assumes the reader will be familiar with the concept that a mean stabilizes over time. *See, e.g.*, Seeve Dec., Ex. 1, Zhang, Brooks, Wei, *et al.*, "A 20µW 10MHz Relaxation Oscillator with Adaptive Bias and Fast Self-Calibration in 40nm CMOS for Micro-Aerial Robotics Application," p. 435 (referring to a process for estimating a "statistical average"). *See* Khatri Decl. at ¶ 35.

D. Google's Indefiniteness Argument Is Premature

1. Google's indefiniteness argument involves questions of fact that should not be resolved at this stage of the litigation

Google bears the burden of proof on the issue of indefiniteness, which here involves numerous factual questions that must be proven by clear and convincing evidence. *Sonix Tech.*, 844 F.3d at 1377; *see also Cox Comm's, Inc. v. Sprint Comm. Co. LP*, 838 F.3d 1224, 1228 (Fed. Cir. 2016) ("Any fact critical to a holding on indefiniteness must be proven by the challenger by clear and convincing evidence" (citing *Intel Corp. v. VIA Techs., Inc.*, 319 F.3d 1357, 1366 (Fed. Cir. 2003)).

[6] A person of ordinary skill in the art would further understand that any devices that do not stabilize to a statistical mean over time—such as the device Google mentions that is unstable due to "heat"—would not satisfy the "repeated execution" limitation of the asserted claims, and would not serve any useful purpose as "execution units." *See* Khatri Decl. at ¶ 36.

The Federal Circuit has held that indefiniteness "is amenable to *resolution by the jury* where the issues are factual in nature." *BJ Servs. Co. v. Halliburton Energy Servs., Inc.*, 338 F.3d 1368, 1372 (Fed. Cir. 2003) (emphasis added). This principle holds true in particular when indefiniteness hinges on a "question about the state of the knowledge of a skilled artisan", which the Federal Circuit has explicitly identified as "a question of fact." *Dow Chem. Co. v. Nova Chems. Corp. (Canada)*, 809 F.3d 1223, 1225 (Fed. Cir. 2015).

As demonstrated above, Google's indefiniteness argument raises numerous questions of fact, including questions about the knowledge of a skilled artisan at the time of the invention (*e.g.*, the nature and calculation of the claimed "statistical mean"). *See, e.g., Id.* (noting that a "question about the state of the knowledge of a skilled artisan is a question of fact"). Indeed, many of the assertions that lie at the heart of Dr. Wei's arguments are disputed by Singular's expert Dr. Khatri, including (a) Dr. Wei's claims that: the statistical mean "will change as the same operation is repeatedly executed" (Wei Decl. at ¶ 36); (b) "[t]here is no objective number of repeated executions that would determine whether a device infringes or not" (*id.* at ¶ 36); (c) the number of repeated executions required is a matter of "random chance" (*id.*); (d) the claimed statistical mean is a "moving target" (*id.* at ¶ 50); (e) the asserted claims "fail[] to delineate for those of skill in the art for measuring the difference" between exact and inexact results (*id.* at ¶ 37); and (f) that the claim language prescribes an infringement test that is somehow "unreliable" (*id.*). Not only are Dr. Wei's factual premises in dispute, but also his ultimate conclusion that the term "repeated execution" is indefinite, which opinion is disputed not only by Singular's expert Dr. Khatri, but by Google's own IPR expert, as explained below. *See* Khatri Decl. at ¶¶ 27-36.

Following the standard handed down by the Federal Circuit, "district courts throughout the country have generally been reluctant to consider whether a patent is indefinite at the claim

construction phase, rather than at the summary judgment phase." *Junker v. Med. Components, Inc.*, No. CV 13-4606, 2017 WL 4922291, at *2 (E.D. Pa. Oct. 31, 2017); *see also Nanology Alpha LLC v. WITec Wissenschaftliche Instrumente und Technologie GmbH*, No. 6:16-CV-00445-RWS, 2018 WL 4289342, at *7 (E.D. Tex. 2018) ("The Court recognizes that some indefiniteness questions may not be resolvable at the Markman proceedings and may be submitted to the jury when there are underlying factual disputes; others may not become apparent until after the Court issues its claim construction"); *see* Opening Br. at 16.

Accordingly, under the standard set forth by the cases cited above, Google's indefiniteness argument should be rejected as premature.

III. DISPUTED CLAIM TERMS

A. Google Representations to the PTAB

Though Google now informs this Court that two separate phrases of the asserted claims need be construed, it recently represented to the PTAB just the opposite. In each of Google's six requests for reexamination, Google represented that the claims of the patents—including the asserted claims now before this Court—need no construction and should be given their plain and ordinary meaning. As stated by Google to the PTAB:

> Claim terms are construed herein using the standard used in civil actions under 35 U.S.C. § 112(b), and have been given their ordinary and customary meaning as understood by a POSA in accordance with the specification and prosecution history. 37 C.F.R. § 42.100(b).

But for the term "execution unit," Singular agrees with Google's IPR representations to the PTAB that the remaining terms should be given their plain and ordinary meaning as written in the claims.

B. "Execution Unit"

"execution unit"	
Singular's Proposed Construction	**Google's Proposed Construction**
"processing element comprising an arithmetic circuit paired with a memory circuit"	—

As noted in Singular's opening brief, the term "execution unit" is defined in the patent as a "processing element comprising an arithmetic circuit paired with a memory circuit." Google now concedes that the claim term "execution unit" is properly construed as a processing element. *See* Google Br. at 13 (construing "execution unit" as "processing element"). Accordingly, this portion of Singular's proposed construction is not in dispute.

Google's argument that the term "circuit" should not be included in the construction of "execution unit" is based on the false premise that the asserted claims "cover a software embodiment." Google Br. at 16. This is incorrect. While certain claims of the patents-in-suit do contemplate embodiments that comprise software (*e.g.*, claims 33 and 68 of the '273 patent), no software embodiment is claimed in the *asserted* claims. When the patentee wished to claim a software embodiment he did so. For example, in Claim 33 of the '273 patent (which is *not* asserted herein) it states "wherein the computer program instructions are executable by the processor to emulate a second device."

It is well-established that not every embodiment described in the specification of the patents-in-suit must be covered by every claim of those patents (and indeed some embodiments may not be claimed at all). *See, e.g., Apple Inc. v. Andrea Elecs. Corp.*, 949 F.3d 697, 708 (Fed. Cir. 2020) ("[When] the patent describes multiple embodiments, every claim does not need to cover every embodiment.") (citation omitted); *see also Johnson & Johnston Associates Inc. v.*

R.E. Service Co., Inc., 285 F.3d 1046, 1052 (Fed. Cir. 2002) ("[T]he claim requirement presupposes that a patent applicant defines his invention in the claims, not in the specification.").

Google's argument against the inclusion of "memory" in the construction of "execution unit" is also based on a false premise. Specifically, it is based on the notion that the "memory" recited in claim 25 is "the only meaningful difference between an independent and dependent claim." But this is not the case, as demonstrated by the plain language of claim 25. Google Br. at 15-16. In particular, claim 25 is directed specifically to embodiments in which memory is "locally accessible" to the LPHDR units. This requirement goes further than the "memory circuit" that is included in Singular's construction. As the specification explains, embodiments of the invention can use various types of memory circuits in a variety of configurations, including some memory circuits that are "locally accessible" to LPHDR EUs, and some that are not. *See, e.g.*, '273 patent at 9:8 (referring to "the Hosts's memory"); *see also id. at* 29:8 (referring to "memory coupled to the processor").

C. "Low Precision High Dynamic Range Execution Unit"

"[*low precision high dynamic range*] execution unit"[7]	
Singular's Proposed Construction	**Google's Proposed Construction**
No construction needed except the term "execution unit," as "low precision high dynamic range" is defined in claim itself	"[*low precision and high dynamic range*] processing element designed to perform arithmetic operations on numerical values"

Singular rejects Google's argument that the claimed "execution unit" operates on "numerical values," despite Google's insinuations to the contrary. *See* Google Br. at 13 (suggesting that Singular "shares Google's understanding" on this issue). Google pretends that

[7] Google asks the Court to construe the term "*low precision high dynamic range* execution unit," while Singular has proposed only "execution unit" for construction. As Singular explained in its Opening Brief, the term "low precision high dynamic range" is explicitly defined in the claims themselves and requires no further construction. *See* Singular Op. Br. at 9.

this is a negligible distinction between the parties' constructions, but as explained in Singular's Opening Brief, Google's proposal represents a fundamental departure from the text of the claims, each of which include the phrase "adapted to execute a first operation on a first input signal"—and the clear intent of the patentee, which is to cover a computing device that operates on input *signals*.

As Singular explained in its Opening Brief, all of the Asserted Claims recite "a first input signal *representing* a first numerical value." '273 patent, claim 53 (emphasis added); *see also* '156 patent, claim 7; '961 patent, claims 4, 13; *see* Singular Op. Br. at 11. This language is clear and unambiguous and explicitly distinguishes the "input signal" from the "numerical value" that it *represents*. The specification makes the same distinction using identical language. *See* '273 patent at 10:66-67; *see also id.* at 12:54-55. Google's proposed construction attempts to rewrite the claim so that the execution unit operates directly on "numerical values" rather than on "input signals," contrary to the expressed language of the claim. Finally, as noted above, Google represented to the PTAB that this claim language—which it now seeks to change—needs no construction and should be given its plain and ordinary meaning.

For the reasons explained above and in Singular's Opening Brief, Google's construction contradicts the plain language of the asserted claims as written, and thus must be rejected. *See* Singular Op. Br. at 11.

D. "A First Input Signal Representing a First Numerical Value"

"a first input signal representing a first numerical value"	
Singular's Proposed Construction	**Google's Proposed Construction**
Plain and ordinary meaning	"Digital and/or analog representation of a value that the LPHDR execution unit operates on"

The phrase "a first input signal representing a first numerical value" contains nine words of which Google attempts to change seven, leaving only the word "value" and the article "a."

Google persists in this argument despite representing to the PTAB that this precise language needs no construction and should be given its plain and ordinary meaning.

With its proposed construction, Google once again attempts to replace "signal" with "value," ignoring the plain language of the claims as written and the clear intent of the patentee. Google's argument—that reading the word "signal" out of the asserted claims is justified because it "helps avoid" a "potential indefiniteness issue"—is unpersuasive. Google Br. at 2. In particular, Google states that the term "the possible valid inputs" lacks antecedent basis, even though it is plainly referring back to the "first input signal" limitation at issue here. In short, Google would have the Court once again impermissibly rewrite the claim.

Further, Google's argument relies on the unsupported and unexplained assertion that "the 'first input signal' does not itself have a dynamic range." Google Br. at 19. This assertion is technically incorrect. *See* Khatri Decl. at ¶ 37. Google's argument is also based on the incorrect assertion that Figure 6 of the patents-in-suit shows an "execution unit," when in fact it shows an "*arithmetic* unit" (which is only a *portion* of a execution unit, an embodiment of which is shown, for example, in Figure 4). Google Br. at 18; *see also* '273 patent at 2:52-57; *see also id,* Fig. 4. Google's above arguments do not hold water. Google clearly has no desire to "fix" the asserted claims or "avoid" indefiniteness issues. Instead, this supposed antecedent basis issue is merely a *post hoc* fiction invented by Google to justify its proposed claim construction.

Finally, Google has offered no persuasive argument for importing the limitation that the claimed "signal" be "digital and/or analog." All of the passages from the patent specification that Google cites to support this position explicitly state that they relate only to particular embodiments of the invention, and are not intended to define the term "signal." *See, e.g.*, '273 patent at 11:54 ("One digital embodiment …"); *see also id.* at 6:23-34 ("Another embodiment

…"). Indeed, the specification even indicates that the invention is *not* limited to "digital and/or analog" representations, and that these are merely examples of the types of signals covered by the claimed invention. *See id.* at 24:47-49 ("embodiments of the present invention may represent values in any of a variety of ways, *such as* by using digital or analog representations …") (emphasis added).

Google pretends that its proposed construction would not actually *limit* the claims to analog and/or digital signals, arguing instead that its proposal merely "specifies that the 'first input signal … *can* be an analog signal, a digital signal, or a combination of the two." Google Br. at 17 (emphasis added). This argument is belied by the plain language of Google's proposal itself, which imports "analog and/or digital" into the claim as a limitation—not as a clarifying example.

IV. CONCLUSION

For the reasons set forth above, Singular requests the Court to adopt Singular's sole proposed construction and reject Google's proposed constructions and invalidity positions.

Dated: February 8, 2021

Respectfully submitted,

/s/ Paul J. Hayes

Paul J. Hayes (BBO #227000)
Matthew D. Vella (BBO #660171)
Kevin Gannon (BBO #640931)
Daniel McGonagle (BBO #690084)
Brian M. Seeve (BBO #670455)
PRINCE LOBEL TYE LLP
One International Place, Suite 3700
Boston, MA 02110
Tel: (617) 456-8000
Fax: (617) 456-8100
Email: phayes@princelobel.com
Email: mvella@princelobel.com
Email: kgannon@princelobel.com
Email: dmcgonagle@princelobel.com
Email: bseeve@princelobel.com

ATTORNEYS FOR THE PLAINTIFF

CERTIFICATE OF SERVICE

I certify that on February 8, 2021, I served this document on Defendant by causing a copy to be sent via electronic mail to its counsel of record.

/s/ Paul J. Hayes